IN THE CLAIMS

Please replace all previous claim sets with the claim set which follows

1. (Currently Amended) A user equipment unit which, while communicating with a telecommunications network using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of plural base stations on a second frequency and, while communicating with the telecommunications network using one of the cell or the current active set of base stations on the first frequency, performs measurements respecting signals on the second frequency for the respective plural base stations of the virtual active set, whereby the user equipment unit can switch to the virtual active set of plural base stations upon performance of an inter-frequency handover.

C1 Cont.

2. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein the measurements made at the user equipment unit is triggered either periodically, immediately, or in response to a predetermined event.

3. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein in response to a measurement trigger criteria, the user equipment unit performs and reports inter-frequency measurements for the second frequency.

4. (PREVIOUSLY PRESENTED) The apparatus of claim 3, wherein the measurement trigger criteria which causes the user equipment unit to perform and report inter-frequency measurements for the second frequency is the same criteria which is employed to cause the user equipment unit to perform and report intra-frequency measurements for the first frequency.

5. (PREVIOUSLY PRESENTED) The apparatus of claim 3, wherein the measurement trigger criteria is one of being periodic, immediate, or in response to a predetermined event.

6. (Currently Amended) A telecommunications network wherein a user equipment unit, while using one of a cell or a current active set of base stations on a first frequency, maintains a virtual active set of plural base stations on a second frequency and, while communicating with the telecommunications network using one of the cell or the current active set of base stations on the first frequency, performs measurements respecting signals on the second frequency for the respective plural base stations of the virtual active set;

wherein when the network issues an inter-frequency handover command to the user equipment unit, the user equipment unit switches to the virtual active set of base stations.

Cl Cont

7. (PREVIOUSLY PRESENTED) The network of claim 6, wherein the network provides information regarding the virtual active set of base stations on the second frequency in a measurement control message.

8. (ORIGINAL) The network of claim 7, wherein the measurement control message is included in a DCCH control channel.

9. (ORIGINAL) The network of claim 7, wherein the measurement control message further includes one of a measurement parameter to be measured and a predetermined measurement event which triggers a measurement.

10. (PREVIOUSLY PRESENTED) The network of claim 6, wherein the network provides at least one member of the virtual active set of base stations on the second frequency in a virtual active set update procedure.

11. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein the user equipment unit receives from the network an authorization message that allows the user equipment unit to autonomously update the virtual active set of base stations.

12. (PREVIOUSLY PRESENTED) The apparatus of claim 11, wherein the authorization message specifies one of an event or a parameter that can trigger the update of the virtual active set of base stations without the user equipment unit first having to send a measurement report to the network.

C1 Cont

13. (PREVIOUSLY PRESENTED) The network of claim 6, wherein the virtual active set of base stations on the second frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

14. (PREVIOUSLY PRESENTED) The network of claim 6, wherein the virtual active set of base stations on the second frequency comprises a second network system which differs from a first network system provided on the first frequency.

15. (ORIGINAL) The network of claim 14, wherein the second network system is universal mobile telecommunications (UMTS) and the first network system is a Global System for Mobile (GSM) system.

16. (ORIGINAL) The network of claim 14, wherein the second network system is a system having soft intra-frequency handover and the first network system is universal mobile telecommunications (UMTS).

17. (PREVIOUSLY PRESENTED) The network of claim 6, wherein the network utilizes a frequency quality estimate to determine when to switch to the virtual active set of base stations.

18. (PREVIOUSLY PRESENTED) The network of claim 17, wherein the frequency quality estimate is provided by the equation.

$$Q_{carrier\ j} = 10 \cdot LogM_{carrier\ j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_A} M_{i\ j}\right) + \left(1 - W_j\right) \cdot M_{Best\ j}\right)$$

wherein:

$Q_{frequency\ j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\ j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from the network to the user equipment unit;

wherein when W=0 only the measurement results from the best cell on frequency j is used; and

when W=1 only the sum of the measurement results from the cells in the active set is used.

19. (ORIGINAL) The network of claim 17, wherein the frequency quality estimate is based on two factors: (1) a carrier Radio Signal Strength Indication (RSSI);

Cl
Cont

and (2) whether the Base Transceiver Station Identity Code/Base Station Identifier Code (BSIC) has been confirmed or not.

20. (PREVIOUSLY PRESENTED) The network of claim 17, wherein the network compares the frequency quality estimate to at least one threshold to determine when to switch to the virtual active set of base stations.

21. (ORIGINAL) The network of claim 20, wherein the at least one threshold is chosen to provide hysteresis protection.

22. {CANCELLED}

Cl cont.

23. {CANCELLED}

24. {CANCELLED}

25. {CANCELLED}

26. {CANCELLED}

27. {CANCELLED}

28. {CANCELLED}

29. {CANCELLED}

30. {CANCELLED}

31. {CANCELLED}

32. {CANCELLED}

33. {CANCELLED}

34. {CANCELLED}

35. {CANCELLED}

Cl Cont

36. (Currently Amended) A method of operating a user equipment unit which communicates ~~communications~~ with a telecommunications system, the method comprising the user equipment unit:

while using one of a cell or a current active set of base stations on a first frequency, both

(1) maintaining a virtual active set of plural base stations on a second frequency; and

(2) performing measurements respecting signals on the second frequency for the respective plural base stations of the virtual active set;

switching to the virtual active set of plural base stations upon performance of an inter-frequency handover.

37. (PREVIOUSLY PRESENTED) The method of claim 36, further comprising triggering the measurements made at the user equipment unit either periodically, immediately, or in response to a predetermined event.

38. (PREVIOUSLY PRESENTED) The method of claim 36, further comprising the user equipment unit performing and reporting inter-frequency measurements for the second frequency in response to a measurement trigger criteria.

39. (PREVIOUSLY PRESENTED) The method of claim 38, wherein the measurement trigger criteria which causes the user equipment unit to perform and report inter-frequency measurements for the second frequency is the same criteria which is employed to cause the user equipment unit to perform and report intra-frequency measurements for the first frequency.

40. (PREVIOUSLY PRESENTED) The method of claim 38, wherein the measurement trigger criteria is one of being periodic, immediate, or in response to a predetermined event.

C1 Cont

41. (Currently Amended) A method of operating a telecommunications network which communicates with a user equipment unit, the user equipment unit, while using one of a cell or a current active set of base stations on a first frequency, both (1) maintaining a virtual active set of plural base stations on a second frequency; and (2) performing measurements respecting signals on the second frequency for the respective plural base stations of the virtual active set; the method comprising:

performing an inter-frequency handover so that the user equipment unit switches to the virtual active set of plural base stations.

42. (PREVIOUSLY PRESENTED) The method of claim 41, further comprising the network providing information regarding the virtual active set of base stations on the second frequency in a measurement control message.

43. (ORIGINAL) The method of claim 42, further comprising including the measurement control message in a DCCH control channel.

44. (ORIGINAL) The method of claim 42, further comprising including in the measurement control message further one of a measurement parameter to be measured and a predetermined measurement event which triggers a measurement.

45. (ORIGINAL) The method of claim 36, further comprising the network providing at least one member of the virtual active set of base stations on the second frequency in a virtual active set update procedure.

C1 cont.

46. (PREVIOUSLY PRESENTED) The method of claim 36, further comprising the user equipment unit receiving from the network an authorization message that allows the user equipment unit to update autonomously the virtual active set of base stations.

47. (PREVIOUSLY PRESENTED) The method of claim 46, wherein the authorization message includes one of an event or a parameter that can trigger the update of the virtual active set of base stations without the user equipment unit first having to send a measurement report to the network.

48. (PREVIOUSLY PRESENTED) The method of claim 41, further comprising: maintaining the virtual active set of base stations on the second frequency by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

49. (PREVIOUSLY PRESENTED) The method of claim 41, wherein the virtual active set of base stations on the second frequency comprises a second network system which differs from a first network system provided on the first frequency.

50. (ORIGINAL) The method of claim 49, wherein the second network system is universal mobile telecommunications (UMTS) and the first network system is a system having soft intra-frequency handover.

51. (ORIGINAL) The method of claim 49, wherein the second network system is a Global System for Mobile (GSM) system and the first network system is universal mobile telecommunications (UMTS).

52. (PREVIOUSLY PRESENTED) The method of claim 41, further comprising using a frequency quality estimate to determine when to switch to the virtual active set of base stations.

Cl Cont.

53. (PREVIOUSLY PRESENTED) The method of claim 52, wherein the frequency quality estimate is provided by the equation.

$$Q_{carrier\,j} = 10 \cdot LogM_{carrier\,j} = 10 \cdot Log\left(W_j \cdot \left(\sum_{i=1}^{N_A} M_{i\,j}\right) + \left(1 - W_j\right) \cdot M_{Best\,j}\right)$$

wherein:

$Q_{frequency\,j}$ is the estimated quality of the active set on frequency j;

$M_{frequency\,j}$ is the estimated quality of the active set on frequency j;

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter with the value range 1-0 sent from the network to the user equipment unit;

wherein when W=0 only the measurement results from the best cell on frequency j is used; and

when W=1 only the sum of the measurement results from the cells in the active set is used.

54. (ORIGINAL) The method of claim 52, wherein the frequency quality estimate is based on two factors: (1) a carrier Radio Signal Strength Indication (RSSI); and (2) whether the Base Transceiver Station Identity Code/Base Station Identifier Code (BSIC) has been confirmed or not.

55. (PREVIOUSLY PRESENTED) The method of claim 52, wherein the network compares the frequency quality estimate to at least one threshold to determine when to switch to the virtual active set of base stations.

Cl Cont.

56. (ORIGINAL) The method of claim 55, wherein the at least one threshold is chosen to provide hysteresis protection.

57. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein the signal for which the user equipment unit performs the measurement is a physical control channel on the second frequency.

58. (PREVIOUSLY PRESENTED) The apparatus of claim 1, wherein the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit were to use the second frequency for active traffic.

59. (PREVIOUSLY PRESENTED) The network of claim 22, wherein the signal for which the user equipment unit performs the measurement is a physical control channel on the second frequency.

60. (PREVIOUSLY PRESENTED) The network of claim 22, wherein the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit were to use the second frequency for active traffic.

61. (PREVIOUSLY PRESENTED) The network of claim 28, wherein the signal for which the user equipment unit performs the measurement is a physical control channel on the second frequency.

62. (PREVIOUSLY PRESENTED) The network of claim 28, wherein the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit were to use the second frequency for active traffic.

Cl Cont

63. (PREVIOUSLY PRESENTED) The method of claim 36, wherein the signal for which the user equipment unit performs the measurement is a physical control channel on the second frequency.

64. (PREVIOUSLY PRESENTED) The method of claim 36, wherein the cells which belong to the virtual active set on the second frequency are cells which would be considered in the active set on the second frequency if the user equipment unit were to use the second frequency for active traffic.

65. (Cancelled)

66. (Cancelled)

67. (PREVIOUSLY PRESENTED) A user equipment unit which, while communicating with a telecommunications network using one of a cell or a current active set of base stations which operate on a first frequency, performs measurements respecting signals of a second frequency from each of plural base stations which operate on the second frequency, and maintains as a virtual active set plural base stations which operate on the second frequency and which satisfy network-specified criteria, so that when an inter-frequency handover is required the virtual active set can essentially immediately be utilized as the active set for the user equipment whereby the user equipment unit can be in radio communication with each of the plural base stations in the virtual active set.

68. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the measurements made at the user equipment unit is triggered either periodically, immediately, or in response to a predetermined event.

Cl Cont.

69. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein in response to a measurement trigger criteria, the user equipment unit performs and reports inter-frequency measurements for the second frequency.

70. (PREVIOUSLY PRESENTED) The apparatus of claim 69, wherein the measurement trigger criteria which causes the user equipment unit to perform and report inter-frequency measurements for the second frequency is the same criteria which is employed to cause the user equipment unit to perform and report intra-frequency measurements for the first frequency.

71. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the measurement trigger criteria is one of being periodic, immediate, or in response to a predetermined event.

72. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein when the network issues an inter-frequency handover command to the user equipment unit, the user equipment unit switches to the virtual active set of base stations.

73. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the network provides information regarding the virtual active set of base stations on the second frequency in a measurement control message.

74. (PREVIOUSLY PRESENTED) The apparatus of claim 73, wherein the measurement control message is included in a DCCH control channel.

75. (PREVIOUSLY PRESENTED) The apparatus of claim 73, wherein the measurement control message further includes one of a measurement parameter to be measured and a predetermined measurement event which triggers a measurement.

Cl Cont.

76. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the network provides at least one member of the virtual active set of base stations on the second frequency in a virtual active set update procedure.

77. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the user equipment unit receives from the network an authorization message that allows the user equipment unit to autonomously update the virtual active set of base stations.

78. (PREVIOUSLY PRESENTED) The apparatus of claim 77, wherein the authorization message specifies one of an event or a parameter that can trigger the update of the virtual active set of base stations without the user equipment unit first having to send a measurement report to the network.

79. (PREVIOUSLY PRESENTED) The network of claim 67, wherein the virtual active set of base stations on the second frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

80. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the virtual active set of base stations on the second frequency comprises a second network system which differs from a first network system provided on the first frequency.

81 (PREVIOUSLY PRESENTED) The apparatus of claim 80, wherein the second network system is universal mobile telecommunications (UMTS) and the first network system is a Global System for Mobile (GSM) system.

Cl Cont

82. (PREVIOUSLY PRESENTED) The apparatus of claim 80, wherein the second network system is a system having soft intra-frequency handover and the first network system is universal mobile telecommunications (UMTS).

83. (PREVIOUSLY PRESENTED) The apparatus of claim 67, wherein the network utilizes a frequency quality estimate to determine when to switch to the virtual active set of base stations.

84. (PREVIOUSLY PRESENTED) The apparatus of claim 83, wherein the frequency quality estimate $Q_{carrier\,j}$ of the active set on frequency j is a function of the following parameters:

$$W_j, \quad \sum_{i=1}^{N_A} M_{ij}, \quad M_{Best\,j}$$

wherein:

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter sent from the network to the user equipment unit.

85. (PREVIOUSLY PRESENTED) The apparatus of claim 83, wherein the frequency quality estimate is based on two factors: (1) a carrier Radio Signal Strength Indication (RSSI); and (2) whether the Base Transceiver Station Identity Code/Base Station Identifier Code (BSIC) has been confirmed or not.

86. (PREVIOUSLY PRESENTED) The apparatus of claim 83, wherein the network compares the frequency quality estimate to at least one threshold to determine when to switch to the virtual active set of base stations.

87. (PREVIOUSLY PRESENTED) The apparatus of claim 86, wherein the at least one threshold is chosen to provide hysteresis protection.

Cl Cont.

88. (PREVIOUSLY PRESENTED) A user equipment unit which, while communicating with a telecommunications network using one of a cell or a current active set of base stations which operate on a first frequency, performs measurements respecting (1) signals of a second frequency from each of plural base stations which operate on the second frequency and (2) signals of a third frequency from each of plural base stations which operate on the third frequency; and maintains (1) as a first virtual active set plural base stations which operate on the second frequency and which satisfy network-specified criteria and (2) as a second virtual active set plural base stations which operate on the third frequency and which satisfy the network-specified criteria; so that when an inter-frequency handover is required one of the first virtual active set and the second active set can essentially immediately be utilized as the active set for the user equipment.

89. (PREVIOUSLY PRESENTED) The apparatus of claim 88, wherein one of the first virtual active set of base stations on the second frequency and the second virtual active set of base stations on the third frequency is maintained by a second operator which differs from a first operator which maintains the current active set of base stations on the first frequency.

90. (PREVIOUSLY PRESENTED) The apparatus of claim 88, wherein one of the first virtual active set of base stations on the second frequency and the second virtual active set of base stations on the third frequency comprises a second network system which differs from a first network system provided on the first frequency.

91. (PREVIOUSLY PRESENTED) The apparatus of claim 90, wherein the second network system is universal mobile telecommunications (UMTS) and the first network system is a Global System for Mobile (GSM) system.

Cl Cont.

92. (PREVIOUSLY PRESENTED) The apparatus of claim 17, wherein the frequency quality estimate $Q_{carrier\,j}$ of the active set on frequency j is a function of the following parameters:

$$W_j, \quad \sum_{i=1}^{N_A} M_{ij}, \quad M_{Best\,j}$$

wherein:

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter sent from the network to the user equipment unit.

93. (PREVIOUSLY PRESENTED) The method of claim 52, wherein the frequency quality estimate $Q_{carrier\,j}$ of the active set on frequency j is a function of the following parameters:

$$W_j,\ \sum_{i=1}^{N_A} M_{ij},\ M_{Best\,j}$$

wherein:

M_i is a measurement result of cell i in the active set;

N_A is the number of cells in the active set;

M_{Best} is the measurement result of the strongest cell in the active set;

W is a parameter sent from the network to the user equipment unit.

Please add new claims 94 - 98 as follows:

94. (NEW) The apparatus of claim 1, wherein when a determination is made that an inter-frequency handover should be performed, the user equipment unit can switch to the virtual active set of plural base stations without making measurements respecting the signals on the second frequency after the determination and before using the virtual active set of plural base stations as a new active set.

95. (NEW) The network of claim 6, wherein when a determination is made that an inter-frequency handover should be performed, the user equipment unit can switch to the virtual active set of plural base stations without making measurements respecting the signals on the second frequency after the determination and before using the virtual active set of plural base stations as a new active set.

96. (NEW) The method of claim 36, further comprising, when a determination is made that an inter-frequency handover should be performed, switching to the virtual active set of plural base stations without making measurements respecting the signals on

the second frequency after the determination and before using the virtual active set of plural base stations as a new active set.

97. (NEW) The method of claim 41, further comprising, when a determination is made that an inter-frequency handover should be performed, switching to the virtual active set of plural base stations without making measurements respecting the signals on the second frequency after the determination and before using the virtual active set of plural base stations as a new active set.

U
Corel.

98. (NEW) The apparatus of claim 67, wherein the virtual active set being essentially immediately utilized involves the user equipment unit switching to the virtual active set of plural base stations without making measurements respecting the signals on the second frequency after a determination that an inter-frequency handover should be performed and before using the virtual active set of plural base stations as a new active set.